

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce W. Greenhaus on 5/6/2009

The application has been amended as follows:

a.) In claim 7, line 12, replace the phrase " an equalizer coupled to receive the digitized signals" with "an equalizer coupled to receive the digitized signals, wherein the equalizer is a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where x, y, k, and j are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator;"

b.) Claims 32 and 33 are cancelled.

c.) Replace claim 34 with; "The system of Claim 7, wherein  $C_k^x(0)$  is one and  $C_k^y(0)$  is zero."

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d.) Replace claim 35 with “The system of Claim 34, wherein the parameters  $C_k^x(-1)$  is one and  $C_k^y(-1)$  are fixed.”

e.) In claim 36, replace “C; (-1)” with  $C_k^x(-1)$ .

f.) In claim 37, replace “C;(-1)” with  $C_k^y(-1)$ .

Replace claim 38 with the following:

A method of receiving data in a serial/deserializer system, comprising:

receiving an input signal into a plurality of demodulators coupled to a single conducting differential pair, each of the plurality of demodulators receiving signals from one of a plurality of transmission bands synchronously with others of the plurality of demodulators, a plurality of bits of the received input signal having been synchronously encoded and transmitted across the plurality of transmission bands, each of the plurality of demodulators performing the functions of:

analog down-converting the input signal to obtain a base band signal corresponding to one of the respective plurality of transmission bands;

filtering the base band signal to remove signals not in the base band;

digitizing the filtered base band signal to obtain a digitized signal;

equalizing the digitized signal, wherein equalizing is accomplished using a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where x, y, k, and j are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to

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avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator; and

decoding the equalized signal to recover data that is substantially the same as that transmitted by a corresponding modulator in a transmitter, wherein the plurality of bits synchronously transmitted across the plurality of transmission bands of the serial/deserializer system is recovered,

wherein operating parameters of at least one of the down-converting, the filtering, the digitizing and equalizing are adaptively chosen.

Replace claim 45 with the following:

A receiver system in a serial/deserializer system, comprising:

means for receiving an input signal from a single conductive differential pair, the input signal including a plurality of transmission bands; and for each of the plurality of transmission band:

means for down-converting the input signal to a base-band signal;

means for obtaining a digital signal from the base-band signal;

means for equalizing the digital signal, wherein equalizing is accomplished using a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where x, y, k, and j are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator; and

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means for decoding the equalized signal to recover data transmitted by a corresponding modulator in a transmitter coupled to the single conductive differential pair,

wherein a plurality of bits that were synchronously transmitted across the plurality of transmission bands is recovered, and the means for down-converting, means for obtaining, and means for equalizing, and means for decoding for each of the plurality of transmission bands are synchronous to each other; and

wherein operating parameters of at least one of the means for down-converting, the means for filtering, the means for obtaining a digital signal, and means for equalizing are adaptively chosen.

## **REASONS FOR ALLOWANCE**

2. The following is an examiner's statement of reasons for allowance: The instant application discloses a serial/deserializer transmission system, a method of receiving data in a serial/deserializer system, and a receiver system in a serial/deserializer system. The closest prior art of record is applicant's US Patent 7,403,752 B2, US Patent 7,295,623 B2 and US Patent 7,388,904 B2. A search of prior art records has failed to teach or suggest, alone or in combination:

A serial/deserializer transmission system, comprising:

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a plurality of demodulators, each of the plurality of demodulators receiving signals from one of a plurality of transmission bands that are transmitted on a single electrically differential conductive pair, at least one of the plurality of demodulators comprising:

an analog down converter that converts an input signal from the one of the plurality of transmission bands to a base band; a filter coupled to receive signals from the down converter, the filter substantially filtering out signals not in the base band;

an analog-to-digital converter coupled to receive signals from the filter and generate digitized signals;

an equalizer coupled to receive the digitized signals; *wherein the equalizer is a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where  $x$ ,  $y$ ,  $k$ , and  $j$  are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator; and*

a decoder coupled to receive signals from the equalizer and generate recreated data, the recreated data being substantially the same data transmitted by a corresponding modulator,

wherein the plurality of demodulators recover a plurality of bits synchronously distributed across the plurality of transmission bands in the serial/deserializer transmission system, the plurality of demodulators being synchronous to each other” (see interview summary for applicant's comments) as disclosed in claim 7.

“A method of receiving data in a serial/deserializer system, comprising:

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receiving an input signal into a plurality of demodulators coupled to a single conducting differential pair, each of the plurality of demodulators receiving signals from one of a plurality of transmission bands synchronously with others of the plurality of demodulators, a plurality of bits of the received input signal having been synchronously encoded and transmitted across the plurality of transmission bands, each of the plurality of demodulators performing the functions of:

analog down-converting the input signal to obtain a base band signal corresponding to one of the respective plurality of transmission bands;

filtering the base band signal to remove signals not in the base band;

digitizing the filtered base band signal to obtain a digitized signal;

equalizing the digitized signal; *wherein equalizing is accomplished using a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where  $x$ ,  $y$ ,  $k$ , and  $j$  are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator; and*

decoding the equalized signal to recover data that is substantially the same as that transmitted by a corresponding modulator in a transmitter, wherein the plurality of bits synchronously transmitted across the plurality of transmission bands of the serial/deserializer system is recovered” (see interview summary for applicant’s comments) as disclosed in claim 38.

A receiver system in a serial/deserializer system, comprising:

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means for receiving an input signal from a single conductive differential pair, the input signal including a plurality of transmission bands; and for each of the plurality of transmission band:

means for down-converting the input signal to a base-band signal;

means for obtaining a digital signal from the base-band signal;

means for equalizing the digital signal; *wherein equalizing is accomplished using a complex equalizer executing a transfer function, the transfer function having parameters  $C_k^x(j)$  and  $C_k^y(j)$ , where  $x$ ,  $y$ ,  $k$ , and  $j$  are integers; wherein the parameters  $C_k^x(0)$  and  $C_k^y(0)$  are fixed to avoid interaction with an adaptation of gain coefficients used in an amplifier and a carrier phase rotation performed in a phase rotator; and*

means for decoding the equalized signal to recover data transmitted by a corresponding modulator in a transmitter coupled to the single conductive differential pair,

wherein a plurality of bits that were synchronously transmitted across the plurality of transmission bands is recovered, and the means for down-converting, means for obtaining, and means for equalizing, and means for decoding for each of the plurality of transmission bands are synchronous to each other” (see interview summary for applicant’s comments) as disclosed in claim 45.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### **CONCLUSION**

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Raghavan et al. discloses Near-End, Far-end and Echo Cancellers In A Multi-Channel Transceiver System in US Patent 7,388,904 B2.

b.) Raghavan et al. discloses Multi-Channel Communications Transceiver in US Patent 7,403,752 B2.

c.) Raghavan discloses High-Speed Communications Transceiver in US Patent 7,295,623 B2.

d.) Subramanian et al. discloses Method For Allocating Bits And Power In Multi-Carrier Communication System in US Patent 2001/0031014 A1.

e.) Giallorenzi et al. discloses Two-Dimensional Channel Bonding In A Hybrid CDMA/FDMA Fixed Wireless Access System To Provide Finely Variable Rate Channels in US Patent 7,190,683 B2.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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/Tesfaldet Bocure/  
Primary Examiner, Art Unit 2611

lbw  
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